

## l9\_homothet

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Let  $v7\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v1\_diraf : \iota \Rightarrow o$  be given. Let  $v2\_diraf : \iota \Rightarrow o$  be given. Let  $l1\_analoaf : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $r1\_aff\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r2\_analoaf : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v7\_struct\_0 X0) \wedge ((v1\_diraf X0) \wedge (l1\_analoaf X0))) \Rightarrow \\ & (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2.(m1\_subset\_1 \\ & X2 (u1\_struct\_0 X0)) \Rightarrow ((r1\_aff\_1 X0 X1 X1 X2) \wedge ((r1\_aff\_1 X0 X1 X2 \\ & X2) \wedge (r1\_aff\_1 X0 X1 X2 X1)))))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v7\_struct\_0 X0) \wedge ((v1\_diraf X0) \wedge (l1\_analoaf X0))) \Rightarrow \\ & (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2.(m1\_subset\_1 \\ & X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 \\ & X0)) \Rightarrow ((r1\_aff\_1 X0 X1 X2 X3) \Rightarrow ((r1\_aff\_1 X0 X1 X3 X2) \wedge ((r1\_aff\_1 \\ & X0 X2 X1 X3) \wedge ((r1\_aff\_1 X0 X2 X3 X1) \wedge ((r1\_aff\_1 X0 X3 X1 X2) \wedge (r1\_aff\_1 \\ & X0 X3 X2 X1)))))))))) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v7\_struct\_0 X0) \wedge ((v1\_diraf X0) \wedge (l1\_analoaf X0))) \Rightarrow \\ & (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2.(m1\_subset\_1 \\ & X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 \\ & X0)) \Rightarrow (\forall X4.(m1\_subset\_1 X4 (u1\_struct\_0 X0)) \Rightarrow (\forall X5. \\ & (m1\_subset\_1 X5 (u1\_struct\_0 X0)) \Rightarrow (((r1\_aff\_1 X0 X1 X2 X4) \wedge ((r1\_aff\_1 \\ & X0 X1 X3 X5) \wedge (X4 = X5)) \Rightarrow ((r1\_aff\_1 X0 X1 X2 X3) \vee ((X4 = X1) \wedge (X5 = X1)))))))))) \end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v7\_struct\_0 X0) \wedge ((v1\_diraf X0) \wedge (l1\_analoaf X0))) \Rightarrow \\
& (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2.(m1\_subset\_1 \\
& \quad X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 \\
& \quad X0)) \Rightarrow (\forall X4.(m1\_subset\_1 X4 (u1\_struct\_0 X0)) \Rightarrow ((r2\_analoaf \\
& X0 X1 X2 X3 X4) \Rightarrow ((r2\_analoaf X0 X1 X2 X4 X3) \wedge ((r2\_analoaf X0 X2 X1 X3 \\
& X4) \wedge ((r2\_analoaf X0 X2 X1 X4 X3) \wedge ((r2\_analoaf X0 X3 X4 X1 X2) \wedge ((r2\_analoaf \\
& X0 X3 X4 X2 X1) \wedge ((r2\_analoaf X0 X4 X3 X1 X2) \wedge (r2\_analoaf X0 X4 X3 X2 \\
& \quad X1))))))))))))) \\
& \tag{4}
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v7\_struct\_0 X0) \wedge ((v1\_diraf X0) \wedge ((v2\_diraf X0) \wedge \\
& \quad (l1\_analoaf X0)))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 \\
& \quad X0)) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3. \\
& \quad (m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow (\forall X4.(m1\_subset\_1 X4 \\
& \quad (u1\_struct\_0 X0)) \Rightarrow ((r2\_analoaf X0 X1 X2 X3 X4) \Rightarrow ((r1\_aff\_1 X0 X1 \\
& X2 X3) \vee ((X3 = X4) \vee ((\neg r1\_aff\_1 X0 X3 X4 X1) \wedge ((\neg r1\_aff\_1 X0 X2 X1 X4) \wedge \\
& \quad (\neg r1\_aff\_1 X0 X4 X3 X2))))))))))))) \\
& \tag{5}
\end{aligned}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.((\neg v7\_struct\_0 X0) \wedge ((v1\_diraf X0) \wedge ((v2\_diraf X0) \wedge \\
& \quad (l1\_analoaf X0)))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 \\
& \quad X0)) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3. \\
& \quad (m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow (\forall X4.(m1\_subset\_1 X4 \\
& \quad (u1\_struct\_0 X0)) \Rightarrow (\forall X5.(m1\_subset\_1 X5 (u1\_struct\_0 X0)) \Rightarrow \\
& ((X3 = X1) \Rightarrow ((X1 = X2) \vee (((\neg (\neg r1\_aff\_1 X0 X1 X2 X3) \wedge ((r1\_aff\_1 X0 X1 \\
& X3 X4) \wedge (r2\_analoaf X0 X2 X3 X5 X4))) \wedge (\neg (r1\_aff\_1 X0 X1 X2 X3) \wedge (\exists X6. \\
& \quad (m1\_subset\_1 X6 (u1\_struct\_0 X0) \wedge (\exists X7.(m1\_subset\_1 X7 \\
& \quad (u1\_struct\_0 X0) \wedge ((\neg r1\_aff\_1 X0 X1 X2 X6) \wedge ((r1\_aff\_1 X0 X1 X6 X7) \wedge \\
& ((r2\_analoaf X0 X2 X6 X5 X7) \wedge ((r2\_analoaf X0 X6 X3 X7 X4) \wedge (r1\_aff\_1 \\
& \quad X0 X1 X2 X4)))))))))) \vee (X4 = X1))))))))) \\
& \tag{6}
\end{aligned}$$